

WHAT IS CLAIMED IS:

1. Seed of hybrid maize variety designated 37A91, representative seed of said variety having been deposited under ATCC Accession Number \_\_\_\_\_.
2. A maize plant, or a part thereof, produced by growing the seed of claim 1.
3. Pollen of the plant of claim 2.
4. An ovule of the plant of claim 2.
5. A tissue culture of regenerable cells produced from the plant of claim 2.
6. Protoplasts produced from the tissue culture of claim 5.
7. The tissue culture of claim 5, wherein cells of the tissue culture are from a tissue selected from the group consisting of leaf, pollen, embryo, root, root tip, anther, silk, flower, kernel, ear, cob, husk and stalk.
8. A maize plant regenerated from the tissue culture of claim 5, said plant having all the morphological and physiological characteristics of hybrid maize plant 37A91, representative seed of said plant having been deposited under ATCC Accession No. \_\_\_\_\_.
9. A method for producing an F1 hybrid maize seed, comprising crossing the plant of claim 2 with a different maize plant and harvesting the resultant F1 hybrid maize seed.

10. A maize plant, or a part thereof, having all the physiological and morphological characteristics of the hybrid maize plant 37A91, representative seed of said plant having been deposited under ATCC Accession No. \_\_\_\_\_.

11. A method of introducing a desired trait into a hybrid maize variety 37A91 comprising:

(a) crossing at least one of inbred maize parent plants GE616835 and GE616852, representative seed of which have been deposited under ATCC Accession Nos. as \_\_\_\_\_ and \_\_\_\_\_ respectively, with another maize line that comprises a desired trait, to produce F1 progeny plants, wherein the desired trait is selected from the group consisting of male sterility, herbicide resistance, insect resistance, disease resistance and waxy starch;

(b) selecting said F1 progeny plants that have the desired trait to produce selected F1 progeny plants;

(c) backcrossing the selected progeny plants with said inbred maize parent plant to produce backcross progeny plants;

(d) selecting for backcross progeny plants that have the desired trait and morphological and physiological characteristics of said inbred maize parent plant to produce selected backcross progeny plants;

(e) repeating steps (c) and (d) three or more times in succession to produce a selected fourth or higher backcross progeny plants; and

(f) crossing said fourth or higher backcross progeny plant with the other inbred maize parent plant to produce a hybrid maize variety 37A91 with the desired trait and all of the morphological and physiological characteristics of hybrid maize variety 37A91 listed in Table 1 as determined at the 5% significance level when grown in the same environmental conditions.

12. A plant produced by the method of claim 11, wherein the plant has the desired trait and all of the physiological and morphological characteristics of hybrid maize

variety 37A91 listed in Table 1 as determined at the 5% significance level when grown in the same environmental conditions.

13. The plant of claim 12 wherein the desired trait is herbicide resistance and the resistance is conferred to an herbicide selected from the group consisting of: imidazolinone, sulfonylurea, glyphosate, glufosinate, L-phosphinothricin, triazine and benzonitrile.

14. The plant of claim 12 wherein the desired trait is insect resistance and the insect resistance is conferred by a transgene encoding a *Bacillus thuringiensis* endotoxin.

15. The plant of claim 12 wherein the desired trait is male sterility and the trait is conferred by a cytoplasmic nucleic acid molecule that confers male sterility.

16. A method of modifying fatty acid metabolism, phytic acid metabolism or carbohydrate metabolism in a hybrid maize variety 37A91 comprising:

(a) crossing at least one of inbred maize parent plants GE616835 and GE616852, representative seed of which have been deposited under ATCC Accession Nos. as \_\_\_\_\_ and \_\_\_\_\_ respectively, with another maize line that comprises a nucleic acid molecule encoding an enzyme selected from the group consisting of phytase, stearyl-ACP desaturase, fructosyltransferase, levansucrase, alpha-amylase, invertase and starch branching enzyme;

(b) selecting said F1 progeny plants that have said nucleic acid molecule to produce selected F1 progeny plants;

(c) backcrossing the selected progeny plants with said inbred maize parent plant to produce backcross progeny plants;

(d) selecting for backcross progeny plants that have said nucleic acid molecule and morphological and physiological characteristics of said inbred maize parent plant to produce selected backcross progeny plants;

(e) repeating steps (c) and (d) three or more times in succession to produce a selected fourth or higher backcross progeny plants; and

(f) crossing said fourth or higher backcross progeny plant with the other inbred maize parent plant to produce a hybrid maize variety 37A91 that comprises said nucleic acid molecule and has all of the morphological and physiological characteristics of hybrid maize variety 37A91 listed in Table 1 as determined at the 5% significance level when grown in the same environmental conditions.

17. A plant produced by the method of claim 16, wherein the plant comprises the nucleic acid molecule and has all of the physiological and morphological characteristics of hybrid maize variety 37A91 listed in Table 1 as determined at the 5% significance level when grown in the same environmental conditions.

18. A method for producing a maize seed, comprising crossing the plant of claim 2 with itself or a different maize plant and harvesting the resultant maize seed.